

CONVENTION ON THE CONTROL AND MARKING OF ARTICLES OF PRECIOUS METALS

PMC/W 2/2001 (Rev.10)

Annex

1 January 2019

COMPILATION OF

DECISIONS ON TECHNICAL MATTERS RELATED TO ANNEXES I AND II OF THE CONVENTION ON THE CONTROL AND MARKING OF ARTICLES OF PRECIOUS METALS

*Adopted by the Standing Committee on the basis of Article 10,
paragraph 2, 3rd indent, of the Convention (as amended in 2001)
at its 66th meeting in Zurich on 13 April 2010*

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NOTE TO THE READER

This compilation contains technical requirements for the practical implementation of Annexes I and II of the Precious Metals Convention (document PMC/W 2/2000 (Rev. 3)). Both documents must thus be read in parallel.

In the Convention's Annexes reference is made to specific rules, methods, exceptions, etc., which are defined by the Standing Committee. The present compilation contains such specific rules, methods, exceptions, etc., which have been decided by the Standing Committee on the basis of Article 10, paragraph 2, 3rd indent, of the Convention.

The numbering of headings in this compilation follows the same numbering as in the Convention's Annexes.

Examples given at Annex of the present compilation are for illustration purposes only; they are not exhaustive.

TECHNICAL DECISIONS REGARDING ANNEX I

(Definitions and Technical Requirements)

1. DEFINITIONS

1.1 Precious metals

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1.2 Precious metal alloy

Annex I defines a precious metal alloy as “a solid solution containing at least one precious metal”. By “solution” is meant a mixture of a precious metal with other metallic or non-metallic substances which is homogeneous¹ at least at the macroscopic scale².

1.3 Precious metal article

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1.4 Mixed precious metal article

-

1.5 Multimetal Article

-

1.6 Fineness

-

1.7 Standard of fineness

-

1.8 Coating/plating

Permitted materials are precious metals (or precious metal alloys) and non-metallic substances.

¹ A substance is homogeneous when it shows no variation in properties

² i.e. seen or measured by a 10x magnifying glass but without the help of a microscope

1.9 Base metals

-

1.10 Assay

-

1.11 Other definitions and further details

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2. TECHNICAL REQUIREMENTS

2.1 Articles not covered by the Convention

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2.2 Standards of fineness applied under the Convention

A. Minimum standards

The minimum standards of fineness applied under the Convention are the following:

Platinum: 500
Gold: 375
Palladium: 500
Silver: 800

B. Nominal standards

The nominal standards of fineness applied under the Convention are the following:

Gold	375 ‰
	417 ‰
	585 ‰
	750 ‰
	800 ‰
	916 ‰
	990 ‰
999 ‰	

Platinum	500 ‰ 600 ‰ 850 ‰ 900 ‰ 950 ‰ 990 ‰ 999 ‰
Palladium	500 ‰ 950 ‰ 990 ‰ 999 ‰
Silver	800 ‰ 830 ‰ 835 ‰ 925 ‰ 958 ‰ 990 ‰ 999 ‰

2.3 Tolerance

-

2.4 Use of solder

2.4.1 -

2.4.2 Practical exceptions and other methods of joining

A. Practical exceptions

A1. Precious metal

Gold

- Gold alloy articles with a fineness of more than 750/1000 shall be soldered with solder of a minimum fineness of 750/1000 gold.
- In the case of gold articles of filigree work and watch cases of the 750 standard, the solder shall contain not less than 740 parts of gold per 1,000. For white gold articles of the 750 standard the solder shall contain not less than 585 parts of gold per 1,000.

- Gold chains made from wire with less than 1mm diameter can be soldered with solder without gold contents. The solders shall not induce a decrease of the measured mean fineness below the declared fineness.

Silver

- Solder for silver articles of the 925 standard shall contain not less than 650 parts of silver per 1,000.
- Solder for silver articles of the 800 and 830 standards shall contain not less than 550 parts of silver per 1,000.

Platinum

- For joining parts of platinum articles solder shall be used with a minimum total content of precious metals³ of 800 parts per 1,000⁴.

Palladium

- For joining parts of palladium articles solder shall be used with a minimum total content of precious metals³ of 700 parts per 1,000⁵.

A2. Mixed precious metal

The solder can be the permitted solder for the least precious metal fineness.

A3. Precious metal with base metal

Any suitable solder, including base metal, can be used.

B. Other methods of joining

Adhesives may be used instead of the permitted solders.

2.5 Use of working base metal parts and non-metallic substances in precious metal articles

2.5.1 -

³ Precious metals are defined at paragraph 1.1 of Annex I to the Convention.

⁴ This rule applies to all platinum finenesses, as defined at paragraph 2.2 of Annex I to the Convention.

⁵ This rule applies to all palladium finenesses, as defined at paragraph 2.2 of Annex I to the Convention.

2.5.2 Further details & exceptions

A. Further details

A1. Base metal parts and non-metallic part for technical reasons

Examples of base metal parts permitted as a mechanical function for which precious metals are unsuitable either for strength or durability are given at Annex.

A2. Non-metallic substances

In electroformed articles the kernel made of non-metallic substance (e.g. plastic, wax, etc.), which is needed for the electrochemical manufacturing process of the shell, must be removed after the process. Electroformed articles must be hollow and self-supporting.

A3. Mark "METAL"

Marks, which have an equivalent and unequivocal meaning and which are commonly used, are authorised. "Equivalent and unequivocal" means that the alternative term is synonymous to METAL (a similar term or name) and explicit, i.e. not subject to interpretation. Example: "stainless steel". Abbreviations shall not be used. Subject to B1, chemical symbols of the periodic table can be added.

B. Exceptions

B1. Where it is impracticable to stamp or engrave "METAL", the base metal part shall be clearly distinguishable by colour from the precious metal with the exception of clock or watch movements. See also A3 and 5.9.

B2. Non visible, non metallic substances are permitted in the following cases:

- Filling the base with non metallic material is permitted for better stability (e.g. candle holders, flowerpots and similar silver articles).
- Filling the handles with mastic (or similar material) is allowed (e.g. cutlery, salad servers, carving knives and forks, dessert knives, manicure sets, toilet sets and similar articles).

2.6 **Multimetal Articles**

2.6.1 -

2.6.2 Further details & exceptions

A multimetal article is an article composed of:

- (1) a precious metal of a standard of fineness applied in this Convention (see paragraph 2.2 of Annex I) having
 - a) a thickness of not less than 500 micrometres,
 - b) a surface sufficiently large to allow the application of the marks defined in paragraph 5.1 of Annex II of the Convention (for marking requirements and minimum size, see paragraphs 5.1.3 and 5.5.2),

and

- (2) non-precious metals, which are:
 - a) visible,
 - b) distinguishable by colour (i.e. neither coated nor treated to give the appearance of a precious metal),
 - c) marked <METAL> (or equivalent⁶) in line with the Convention's requirements (Annex I to the Convention).

2.7 Coating of precious metal articles

A. Permitted coatings

Subject to the provisions of paragraph 5.8.1 of Annex II concerning the differentiation of colours on mixed articles, the following coatings are permitted:

- a) Metallic coating (for example: galvanic) in accordance with the table below:

On	Permitted
Platinum	Rhodium, ruthenium, platinum
Gold	Rhodium, ruthenium, platinum, gold
Palladium	Rhodium, ruthenium, platinum, gold, palladium
Silver	Rhodium, ruthenium, platinum, gold, palladium, silver

⁶ See 2.5.2 A3 above

The precious metals coatings must reach at least the minimum standards of fineness, as defined in paragraph 2.2A above.

If the alloy and the coating are made of the same precious metal, the coating's standard of fineness must be not less than the alloy's fineness.

- b) Chemical or long-lasting thermal treatments (e.g. sulphured silver, Physical Vapour Deposition [PVD], Chemical Vapour Deposition [CVD])

The colouring of the surface of articles of precious metals by means of chemical transformation of the alloy or its components may be permitted under the terms of the Convention as long as any cross-section of such articles is to a standard of fineness applied under the Convention.

- c) Non metallic coatings (e.g. enamel, niello)

B. Exceptions for technical reasons

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* * * * *

TECHNICAL DECISIONS REGARDING ANNEX II

(Control by the authorised assay office(s))

1. General

1.3 The subcontracting of testing is permitted as follows:

A. Short-term subcontracting

An assay office may subcontract its testing competence to another assay office for a limited period of time due to reasons, which are outside its control, e.g. equipment failure, damages to premises, etc.

B. Long-term subcontracting

B1. For metal alloys and standards of fineness, which are uncommon or so low in quantity per year that it would not be possible to achieve enough experience and competence, an assay office may subcontract its testing competence to another assay office, subject to the following conditions:

- a) The Standing Committee, based on a recommendation of the Standing Technical Group (STG), has given its prior agreement to the subcontracting;
- b) The assay office must provide statistical evidence that the testing competence to be outsourced is not a core competence (see B2);
- c) The assay office, to which the testing competence has been subcontracted, is:
 - accredited to ISO 17025 for the testing method;
 - authorised under Article 5 of the Convention; and
 - has no z-score $> |3|$ for 2 consecutive Round Robins over the last 5 years.

B2. The core competence of an assay office is screening, testing and marking. Testing can be subcontracted if:

- a) it contributes marginally to the entire assay office⁷ activity (e.g. less than 5% of the total volume of all articles marked by the assay office);
- b) it is not sufficiently important to justify the purchase and maintenance of specialised equipment; and
- c) it does not allow the staff to maintain its competence.

⁷ In Contracting States, which have voluntary hallmarking and where the number of marked articles is low, the activity of the organisation, to which the assay office belongs, shall be considered.

B3. The guidelines for the assessment requirements of a testing laboratory are contained in the Compilation of Acts of the Standing Committee.

1.4 A non-accredited laboratory should meet at least the following requirements of ISO 17025:

- Developing and implementing Standard Operating Procedures (SOPs) for all relevant methods. The SOPs must be based on the general principles of ISO 17025.
- Using traceable reference material.
- Checking the accuracy of analytical instruments on a regular basis.
- Participating in proficiency testing e.g. Round Robins.
- Defining and implementing a procedure for corrective actions.
- Defining the responsibilities of all relevant laboratory staff.
- Planning and conducting internal quality audits at least once a year.

In order to ensure the correctness and reliability of the analyses and to comply with the requirements of ISO 17025, each of the above steps must be carefully monitored and fully documented. The documentation should be continuously updated and readily accessible on request.

1.5 For the guidelines on Round Robin, see Compilation of Acts of the Standing Committee.

2. Testing

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3. Test Methods and Methods of Analysis

3.1 The homogeneity of the batch may be evaluated by one of the following test methods:

- a) touchstone testing;
- b) testing by X-ray spectroscopy;
- c) analysis of scraps assembled from one or more pieces taken out of the batch.

Other test methods may be used to evaluate the homogeneity of the batch.

- 3.2 The fineness of the precious metals content is determined by one of the following approved methods of analysis:
- 3.2.1 **Platinum:** Determination of platinum in platinum jewellery alloys -- Gravimetric method after precipitation of diammonium hexachloroplatinate (ISO 11210 latest version)
- Determination of platinum in platinum jewellery alloys -- Gravimetric determination by reduction with mercury (I) chloride (ISO 11489 latest version)
- Determination of platinum in platinum jewellery alloys -- Inductively coupled plasma (ICP) solution-spectrometric method using yttrium as internal standard element (ISO 11494 latest version)
- 3.2.2 **Gold:** Determination of gold in gold jewellery alloys -- Cupellation method (fire assay) (ISO 11426 latest version)
- 3.2.3 **Palladium:** Determination of palladium in palladium jewellery alloys -- Gravimetric determination with dimethylglyoxime (ISO 11490 latest version)
- Determination of palladium in palladium jewellery alloys -- Inductively coupled plasma (ICP) solution-spectrometric method using yttrium as internal standard element (ISO 11495 latest version)
- 3.2.4 **Silver:** Determination of silver in silver jewellery alloys -- Volumetric (potentiometric) method using potassium bromide (ISO 11427 latest version)
- Determination of silver in silver jewellery alloys -- Volumetric (potentiometric) method using sodium chloride or potassium chloride (ISO 13756 latest version)
- 3.2.5 **For all precious metals:** X-ray spectrometric method, when the internal method is accredited to ISO 17025 and the measurement uncertainty is equal to or better than that of already accepted methods⁸.

⁸ This means that the measurement uncertainty of the X-Ray spectrometric method should not exceed the following limits:

- gold ± 0.5‰
- silver ± 1.0‰
- platinum ± 5.2‰
- palladium ± 5.8‰

4. Guidelines on Methods of Sampling

4.1 Introduction

The control and marking of articles of precious metals with the CCM consists of (i) assessing the conformity of the precious metal article and (ii) certifying that it is in compliance with the Convention's requirements. This is confirmed by applying the CCM.

The present guidelines relate to the conformity assessment of articles of precious metal. Three distinct steps can be distinguished:

- Screening
- Sampling
- Assaying

4.2 Screening

4.2.1 Screening is a qualitative and semi-quantitative testing of an article's material properties and consists of:

- Visual inspection to ascertain that the articles are marked in accordance with the requirements of the Convention.
- Visual inspection to detect any excessive or sub-standard solder.
- Visual inspection to detect base metal parts or unauthorized filling.
- Test for the presence of plating or other coating and determination of its nature by chemical or other methods such as XRF.
- Segregation of any doubtful articles for special tests.

4.2.2 Three different levels of screening are defined based on the quality level of conformity of articles detected over the rolling year. Information data should be maintained for two years minimum. The appropriate level of screening is determined according to the following formula:

$$QL = \left[1 - \frac{\sum(\text{articles rejected})}{\sum(\text{articles submitted})} \right] \times 100\%$$

Rejected Article = Articles which do not conform with the material and technical requirements of the Convention.

Note: Such requirements include, for example, fineness, authorised coatings, solder composition, authorised working parts or any other technical requirements.

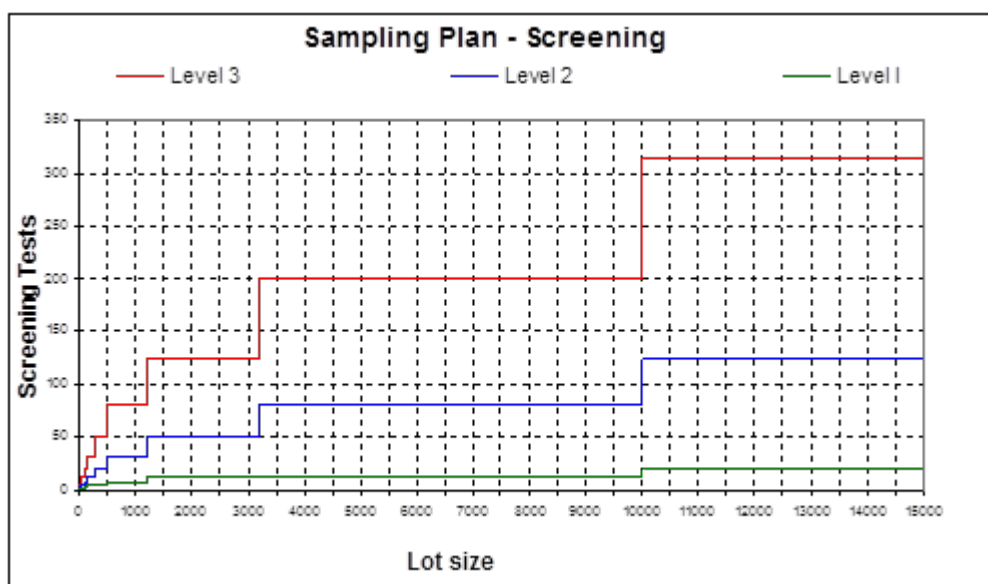
\sum Articles Rejected = Total sum of articles rejected

Note: If one article of a lot is rejected, all articles of the same lot are rejected.

ARTICLES ACCEPTED as a % of ARTICLES SUBMITTED

Level 3	0 – 94.9%	Lowest confidence level	Most screening required
Level 2	95 – 98.9%	Normal confidence level	
Level 1	+ 99%	Highest confidence level	Least screening required

4.2.3 Screening should be performed according to the following plan:



4.3 Sampling

4.3.1 The following methods of sampling may be used:

- cutting
- scraping
- drilling

4.3.2 Cutting is the preferred method for accuracy but it is often not practicable. In such cases, samples may be removed by scraping. In special circumstances samples may also be obtained by drilling.

4.3.3 In special circumstances when an article would be unreasonably damaged by sampling, it is permissible to carry out the assay on a sample of the material used in its manufacture. In such cases the assay office must take any necessary steps to ascertain that the sample is from the same batch of material as that from which the article is made (i.e. the same coil of wire, sheet, bar, etc.).

- 4.3.4 If the surface of the article has been enriched (e.g. by pickling) or if it has been coated with a permitted metal (e.g. by electro deposition), the surface layer must be removed before the sample is taken. This can be carried out by scraping, filing or buffing.
- 4.3.5 Samples may be taken from convenient positions provided that they are representative of the part being sampled. Solder may be included in the sample, except in cases where it is permitted under the terms of the Convention to be of a lower standard of fineness than the standard of the article. Other types of surface impurities such as residues of polishing media must also be removed before samples are taken. Lacquer must also be removed by a suitable solvent.
- 4.3.6 Samples from articles which have been polished or are contaminated with grease may require to be degreased in a suitable solvent before they are assayed.
- 4.3.7 According to paragraph 4 of Annex II to the Convention, the number of articles selected for sampling and the extent to which samples from more than one article are grouped together before assaying will depend on circumstances. For example, in some cases, it may be more appropriate to select one or more articles at random from a lot and to assay them separately, in other cases it may be preferable to sample a greater number of articles and group the samples together before assay. Experience of the likely variation in fineness within a lot and the extent to which the articles may be damaged by sampling will be the deciding factors. In general, there should be a recommended number of articles selected according to the size of the lot and the screening level (see 4.2.3). The following table gives recommended numbers of articles to be selected from lots of different sizes.

4.4 Lot consisting of one part or several parts of the same material

LOT SIZE	SCREENING*			Recommended ASSAYS
	Level 1	Level 2	Level 3	
1	1	1	1	1
2 to 8	2	2	2	1
9 to 15	2	2	3	1
16 to 25	2	3	5	1
26 to 50	2	5	8	1
51 to 90	2	5	13	1
91 to 150	3	8	20	1
151 to 280	5	13	32	1
281 to 500	5	20	50	2
501 to 1,200	8	32	80	2
1,201 to 3,200	13	50	125	3
3,201 to 10,000	13	80	200	4
10,001 to 35,000	20	125	315	5

* By either touchstone or XRF

Note: For the definitions of lot and screening, see glossary in Compilation of Acts of the Standing Committee (PMC/W 1/2001).

- 4.4.1 Where an article selected for sampling is made of several parts, each part of the article shall, where practicable, be sampled.
- 4.4.2 Samples taken from separate parts of an article may be mixed if it appears that the parts are made from the same material. If the separate parts appear to be made of different materials, the samples from such parts should be assayed separately as far as possible. For articles produced by electroforming the marked standard of fineness shall not be higher than that of the lowest tested fineness.
- 4.4.3 If articles are suspected of containing an unauthorized filling, they shall be tested by drilling or cutting or by immersion in a suitable reagent. If the article is suspected of containing iron or steel, it may be tested with a magnet.
- 4.4.4 In cases where sampling may damage the article or the batch is very small (e.g. 1 or just a few articles), non-destructive testing is permissible.

5. Marking

The Common Control Mark may be of a lower fineness than the national hallmark.

5.1 Principle

5.1.3 Marks to be applied on CCM articles

Type 1 of the CCM is applied with the following marks:

- a) a registered responsibility mark as described in paragraph 5.4 of Annex II; and
- b) the mark of the authorised assay office.

Type 2 of the conformity CCM is applied with the following marks:

- a) a registered responsibility mark as described in paragraph 5.4 of Annex II;
- b) the mark of the authorised assay office;
- c) the fineness mark in Arabic numerals; and
- d) a chemical symbol or shield indicating the nature of the precious metal.

Marks b), c) and d) can be combined.

5.2 Methods of marking

Other methods of marking: none.

5.3 Display

A gold pen nib shall be considered as a separate article from the pen.

A pendant incorporating a gold or silver ingot fitted with a frame shall be considered as two separate articles, provided the ingot is loosely fitted and not permanently fixed. The frame may be accepted as a separate and complete article and marked with the Convention marks.

5.4 Register for responsibility marks

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5.5 The Common Control Mark

5.5.2 Approved sizes

The minimum size (height) of the Common Control Mark and other compulsory marks for all precious metals is 0.5 mm, provided that the mark is legible by means of a 10x magnifying glass.

5.6 Articles consisting of more than one alloy of the same precious metal

Gold nuggets

Native gold in the shape of nuggets is allowed -unmarked- on precious metals articles, irrespective of the standard of fineness and of criteria for the determination of colours.

5.7 Articles consisting of parts

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5.8 Mixed precious metal articles

5.8.3 Exceptions

a) White gold parts permitted on platinum articles for technical reasons:

On platinum articles, the following parts may be in white gold (750/1000):

* tongues for bracelets and necklets

- * moving parts of clips for earrings and brooches
 - * pins for brooches
 - * joints and catches for brooches
 - * closing systems for watch bracelets
- b) A precious metal watch-case and attached bracelet may be considered as two separate articles provided that the bracelet is attached by pinning (barrette).
- c) The application of pure silver on gold articles by electro-chemical process is permitted for the technical reason of fixing mounted diamonds and enhancing the reflection of light. The application of the silver must be restricted to the internal surface of the setting only.

5.9 Multimetal articles

The precious metal part of Multimetal Articles can be marked with the mention <METAL> next to the marks defined in paragraph 5.1.2 of Annex II. The mention can be preceded by a sign e.g. + or /.

* * * * *

Examples of precious metals unsuitable for technical reasons**A. General examples:**

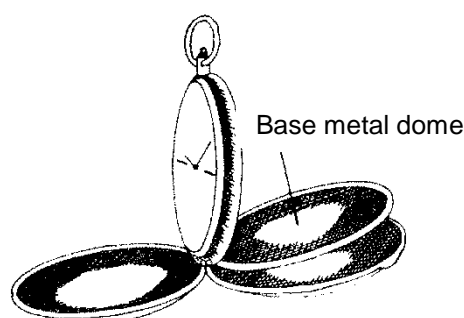
- metal wires used for the assembling of necklaces and bracelets (the metal wires must not be used as decoration);
- magnets for clasps;
- security retainers for tie tacks or badge buttons;
- screws, pins and springs, which may be hidden in the watch mechanism;
- the internal mechanism of lighters and similar mechanisms;
- blades of knives and working parts of bottle openers, corkscrews and similar articles.

B. Examples specific for silver articles

- clasps only the tongue in a box snap;
- pins for silver badge buttons and silver brooches;
- clips for hair clasps, tie clasps, etc.;
- wire for joints of silver hinges.

C. Examples specific to horology (clocks, watches & and similar mechanisms)

- parts of movements such as dials, crowns, winding-shafts and push-pieces;
- bars for fixing the bracelets to the wristwatches;
- screws for fixing the watch back;
- screws for changing the length of the bracelets;
- separable tubes for winding-mechanisms on watch-cases made of gold, platinum and palladium;
- separable or inseparable tubes for winding-mechanisms on silver watch-cases;
- movement-holders and casing-rings;
- domes (double back covers of pocket-watch cases, see drawing below) under the condition that they bear the designation of their composition, for example "METAL" or "STAINLESS STEEL".



D. Pens / biros / roller-balls / propelling pencils

The following applies to writing instruments when the cap, if there is one, is detached from the body (see also drawings below).

- D1. The movements of propelling pencils (and similar mechanisms) may be of base metal.
- D2. For items with a continuous precious metal sleeve, the interior barrel may be of base metal, plastic, resin, or resin covered base metal. The inside parts in non-precious metal must not be used to reinforce the precious metal sleeve.
- D3. For items with pierced sleeves, the interior barrel may only be plastic, resin, or resin covered base metal.
- D4. Clips - may be of base metal and, if so, must be marked "METAL". They may be plated.

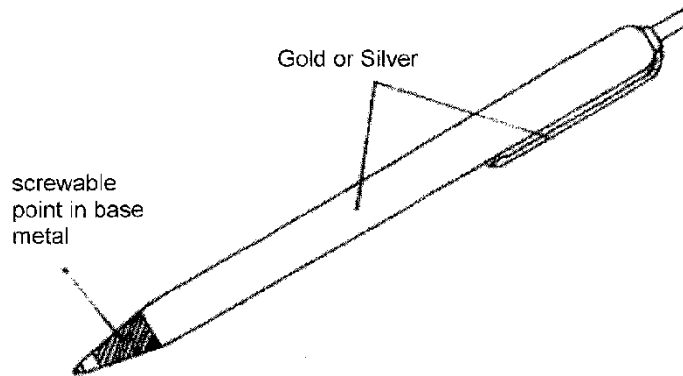
Note: Detachability is irrelevant.

- D5. End parts, e.g. caps, pushers - may be of base metal and, if so, must be marked 'METAL' if they are part of the interior mechanism. They may be of resin, plastic, or resin covered or plastic covered base metal.
- D6. Bands - On the barrel, when the band forms part of the closing mechanism of the cap or to assure tightness of a pen, the band may be in base metal. It may be plated. The band shall be clearly distinguishable by colour from precious metals.
- Any other band, on the body or the cap is decorative and must be in precious metal.
- The only exception is a clip with an integral band secured by an end cap.
- D7. Point - A base metal point is permitted provided it is a different colour. If plated, it must be marked "METAL". Resin or plastic covered base metal is permitted.

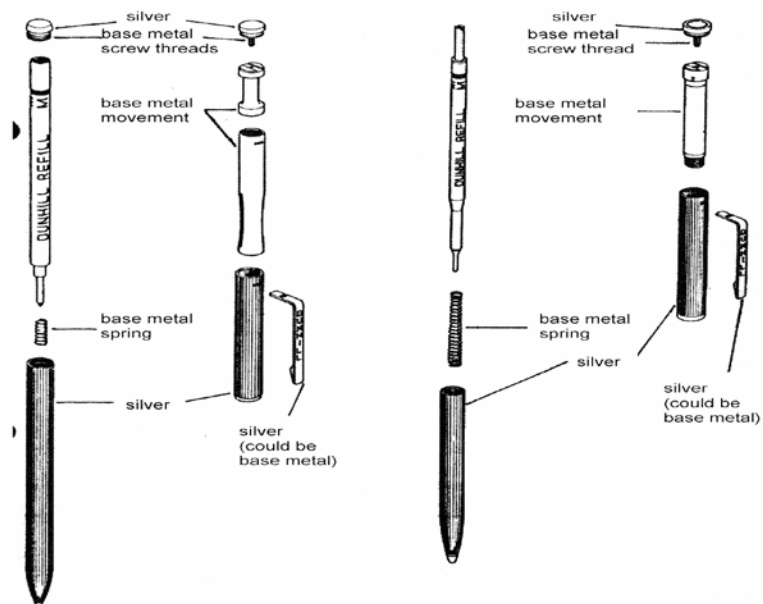
If all base metal parts are the same colour, only one part need be clearly and visibly marked 'METAL'.

Note: The intention of these consents is to define permitted visible base metal parts, and to provide a choice to manufacturers. Resin covered base metal is considered to be clearly distinguishable to the consumer as not being precious metal.

Base metal points for propelling pencils and ballpoint pens



Base metal parts of precious metal writing instruments



Diamond settings made of fine silver on 18 carat gold cufflinks

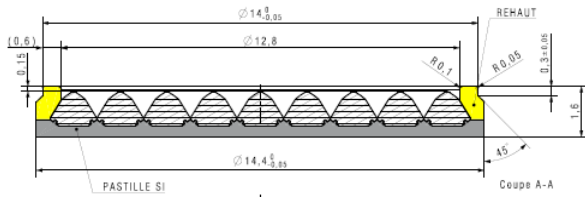


Figure 3: Image of a pure silver plate surrounding the stones by their crowns. An 18 cts white gold elevated rehaut (yellow color) then surrounds the circumference of the pure silver plate (grey color).

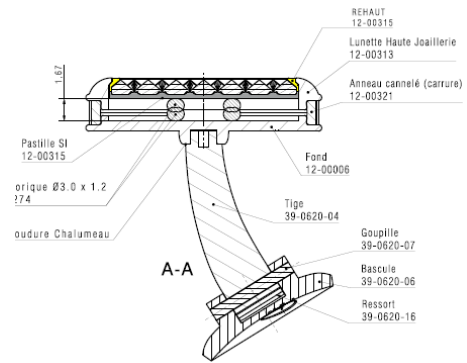


Figure 4: Image of how the pure silver plate is integrated into the 18 cts white gold cufflink.

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